

Patent Application of
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for

**TITLE: CLOCKS WITH UNIQUE TIME DISPLAYS WHICH ARE INTERPRETED BY THE
USE OF TRADITIONAL CLOCK INTERPRETATION MEANS**

CROSS-REFERENCE TO RELATED APPLICATIONS: Not Applicable

FEDERALLY SPONSORED RESEARCH: Not Applicable

SEQUENCE LISTING OR PROGRAM: Not Applicable

BACKGROUND OF THE INVENTION - FIELD OF INVENTION

[0001] The present invention relates to clocks, specifically to clocks with unique time displays that are interpreted through traditional means.

BACKGROUND OF THE INVENTION

[0002] For centuries man has designed and built clocks which served the dual purpose of indicating the current time and adding to the aesthetic decor of an area.

[0003] Traditionally, mechanical clocks, whether driven by weights, springs and/or electrical energy, have consisted of a clock face and a number of hands rotating about a central point on the clock face. The hour hand is typically shorter and completes one revolution every

twelve hours. The minute hand is typically larger and completes one revolution every sixty minutes. To aid in the user's interpretation of the device, the clock face usually features time demarcations. This configuration is ubiquitous and is popular in architectural clocks, wall clocks, desk clocks, and wrist watches.

[0004] Many clock designers, such as in U.S. Pat. No. 2,153,004, by C. H. H. Rodanet, issued April 4, 1939, seek to achieve aesthetic distinction by altering the symbols used on the clock face and/or by designing uniquely shaped hands. That clock was also attached the hands onto rotating disks to give the appearance that the hands were floating.

[0005] Other clock designers, such as in U.S. Pat. No. 5,999,496, by Y. Chaut, issued December 7, 1999, seek to achieve aesthetic appeal through a unique configuration of elements that do not feature hands or traditional clock faces. While aesthetically striking, these clocks do not allow the use of traditional clock interpretation means to determine the indicated time.

[0006] There remains a need, and it would be advantageous to have, clocks which are aesthetically unique and do not possess traditional faces or hands, but nonetheless are interpreted using traditional clock interpretation means.

BACKGROUND OF THE INVENTION - OBJECTS AND ADVANTAGES

[0007] Accordingly, objects and advantages of my invention include:

- (a) to provide a clock with a unique design which is easily read using traditional clock interpretation means;
- (b) to provide a clock where the indicators are set by placing the indicators in the correct orientation, thereby simplifying the clockwork by no longer requiring a clock-setting mechanism;

(c) to provide a clock which is configurable by the reversal or removal of a background ring;

(d) to provide a wall clock which appears to have no supporting frame whatsoever and appears to float and is easily read using traditional clock interpretation means.

[0008] Still further objects and advantages will become apparent from a consideration of the ensuing description and drawings.

BRIEF SUMMARY OF THE INVENTION

[0009] In accordance with the present invention an apparatus for the display of time wherein rigid rings and/or disks are externally driven yielding a distinctive aesthetic character while allowing for traditional clock interpretation means to determine indicated time.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Figure 1 shows an apparatus for the display of time using two clear rigid rings with indicators for hour and minute, a stationary rigid ring with numerals to aid in the interpretation of the indicated time and a driving mechanism which rotates the two clear rigid rings by acting on the inner annular surfaces of the two clear rigid rings.

[0011] Figure 2 shows a section view of the apparatus of figure 1.

[0012] Figure 3 shows an apparatus similar to that of figures 1 and 2 with a third rigid ring to indicate time and a driving mechanism with additional support at the end of the output shaft which rotates the three clear rigid rings by acting on the inner annular surfaces of the three clear rigid rings.

[0013] Figure 4 shows a section view of the apparatus of figure 3.

[0014] Figure 5 shows an apparatus for the display of time using two opaque rigid rings with indicators for hour and minute and a driving mechanism, which rotates the two opaque rigid rings by acting on the inner annular surfaces of the two opaque rigid rings.

[0015] Figure 6 shows a section view of the apparatus of figure 5.

[0016] Figure 7 shows an apparatus for the display of time using two opaque rigid annular parts with indicators for hour and minute, said annular parts being configured in a manner which hides a driving mechanism which rotates the two opaque rigid annular parts by acting on the inner annular surfaces of the opaque rigid annular parts.

[0017] Figure 8 shows a section view of the apparatus of Figure 7.

[0018] Figure 9 shows an apparatus for the display of time using two opaque rigid annular parts with indicators for hour and minute said annular parts being configured in a manner which hides a driving mechanism which rotates the two opaque rigid annular parts by acting on the inner annular surfaces of the opaque rigid annular parts, and a third stationary annular part with numerals to aid in the interpretation of the indicated time.

[0019] Figure 10 shows a section view of the apparatus of Figure 9.

[0020] Figure 11 shows an apparatus for the display of time using an opaque rigid annular part to indicate the minute of the hour and an opaque disk with an indicator for the hour, said annular part and said disk being configured in a manner which hides a driving mechanism which rotates the opaque rigid annular part and the opaque disk by acting on their respective inner annular surfaces.

[0021] Figure 12 shows a section view of the apparatus of Figure 11.

[0022] Figure 13 shows an apparatus for the display of time using two clear rigid rings with indicators for hour and minute, a stationary rigid ring with numerals to aid in the interpretation of the indicated time and a driving mechanism, which rotates the clear rigid rings by acting on their outer annular surfaces.

[0023] Figure 14 shows a side view of the apparatus of Figure 13.

[0024] Figure 15 shows an apparatus for the display of time using an opaque rigid annular part to indicate the minute of the hour and an opaque disk with an indicator for the hour

and a driving mechanism, which rotates the opaque rigid annular part and the opaque disk by acting on their respective outer annular surfaces.

[0025] Figure 16 shows a side view of the apparatus of Figure 15.

DETAILED DESCRIPTIONS - FIGS. 1 AND 2 - PREFERRED EMBODIMENT

[0026] A preferred embodiment of the clock with unique time display of the present invention is illustrated in Figure 1 (front view) and Figure 2 (section view). The motion of the clock is driven by a clockwork **30** that drives a minute indicator drive wheel **26** and an hour indicator drive wheel **28**. The clockwork **30** can be mounted on a wall or a frame to allow the demarcation ring **20**, the minute indicator ring **24** and the hour indicator ring **22** to hang freely.

[0027] In the preferred embodiment, the demarcation ring **20** has the numerals 3, 6, 9, and 12 placed at their corresponding clock positions to aid the viewer in the determination of the indicated time. Alternately, all of the clock numerals 1 through 12, roman numerals, or other graphic indication could be used on the demarcation ring **20** to aid the viewer in the determination of the indicated time. The demarcation ring **20** is not a driven member and does not move. The demarcation ring **20** rests on the body of the clockwork **30**.

[0028] In the preferred embodiment, the minute indicator ring **24** and the hour indicator ring **22** are constructed of a clear material which allows for the demarcation ring **20** to be viewed through the minute indicator ring **24** and the hour indicator ring **22**. The minute indicator ring **24** has an indicator to denote the minute of the hour. The indicator can be either printed on, attached to, or machined into the minute indicator ring **24**. Likewise the hour indicator ring **22** also has an indicator which is smaller than the indicator on the minute indicator ring **24** to denote the hour. The indicator can be either printed on, attached to, or machined into the hour indicator ring **22**.

[0029] The minute indicator drive wheel **26** and an hour indicator drive wheel **28** have small flanges which keep the minute indicator ring **24** and the hour indicator ring **22** properly aligned with respect to each other and the demarcation ring **20**. The clockwork **30** rotationally drives the minute indicator drive wheel **26** at a rate such that the minute indicator ring **24** is

rotated 360 degrees every 60 minutes. The clockwork **30** rotationally drives the hour indicator drive wheel **28** at a rate such that the hour indicator ring **22** is rotated 360 degrees every 12 hours. The resulting effect is that the clock has a unique design that does not have the traditional clock hands, yet the time is interpreted using traditional clock interpretation means. In all embodiments, the time is set by manually positioning the time indicating disks, wheels or plates so that the indicators of hour, minute and second are oriented properly. There is no need to have a time adjustment mechanism on the clockworks.

Figures 3-16 Additional Embodiments

[0030] An additional embodiment is shown in figure 3 and figure 4. This embodiment is substantially similar to the preferred embodiment but with the addition of a third driven wheel, the seconds indicator drive wheel **42**, to a clockwork with support arm **34**. The seconds indicator drive wheel **42** is constructed of a clear material which allows for the demarcation ring **20**, the minute indicator ring **24**, and the hour indicator ring **22** to be viewed through the seconds indicator ring **38**. The seconds indicator ring **38** has an indicator to denote the second of the minute. The indicator can be either printed on, attached to, or machined into the seconds indicator ring **38**.

[0031] The seconds indicator drive wheel **42** has small flanges that keep the seconds indicator ring **38** aligned with respect to the minute indicator ring **24**, the hour indicator ring **22**, and the demarcation ring **20**. The clockwork with support arm **34** rotationally drives the seconds indicator drive wheel **42** at a rate such that the seconds indicator ring **38** is rotated 360 degrees every minute. The clockwork with support arm **34** has a support arm **35** extending from the body of the clockwork and supporting the far end of the drive shaft for the drive wheels **42**, **44** and **46**. The resulting effect is that the clock has a unique design that does not have the traditional clock hands, yet the time is interpreted using traditional clock interpretation means.

[0032] An additional embodiment is shown in figure 5 and figure 6. In this embodiment of the clock with unique time display the motion of the clock is driven by a clockwork **56** that drives a minute indicator drive wheel **54** and an hour indicator drive wheel **52**. The clockwork **56**

can be mounted on a wall or a frame to allow the minute indicator ring **50** and the small hour indicator ring **48** to hang freely. The minute indicator ring **50** and the small hour indicator ring **48** are constructed of a opaque material. The minute indicator ring **50** has an indicator to denote the minute of the hour. The indicator can be either printed on, attached to, or machined into the minute indicator ring **50**. Likewise the small hour indicator ring **48** also has an indicator which is smaller than the indicator on the minute indicator ring **50** to denote the hour. The indicator can be either printed on, attached to, or machined into the small hour indicator ring **48**.

[0033] The minute indicator drive wheel **54** and an hour indicator drive wheel **52** have small flanges which keep the minute indicator ring **50** and the small hour indicator ring **48** properly aligned with respect to each other. The clockwork **56** rotationally drives the minute indicator drive wheel **54** at a rate such that the minute indicator ring **50** is rotated 360 degrees every 60 minutes. The clockwork **56** rotationally drives the hour indicator drive wheel **52** at a rate such that the small hour indicator ring **48** is rotated 360 degrees every 12 hours. The small hour indicator ring **48** is sized so that the indicator on the minute indicating ring **50** is not blocked from view. The resulting effect is that the clock has a unique design that does not have the traditional clock hands, yet the time is interpreted using traditional clock interpretation means.

[0034] An additional embodiment is shown in figure 7 and figure 8. In this embodiment the clockwork **56**, the minute indicator drive wheel **54** and an hour indicator drive wheel **52** are essentially the same as in the previous embodiment shown in figure 5 and figure 6. The clockwork **56** can be mounted on a wall or a frame to allow the minute indicator wheel **58** and the hour indicator wheel **60** to hang freely. The minute indicator wheel **58** and the hour indicator wheel **60** are constructed of a opaque material. The minute indicator wheel **58** has an indicator to denote the minute of the hour. The indicator can be either printed on, attached to, or machined into the minute indicator wheel **58**. Likewise the hour indicator wheel **60** also has an indicator, which is smaller than the indicator on the minute indicator wheel **58** to denote the hour. The indicator can be either printed on, attached to, or machined into the hour indicator wheel **60**.

[0035] The clockwork **56** rotationally drives the minute indicator drive wheel **54** at a rate such that the minute indicator wheel **58** is rotated 360 degrees every 60 minutes. The clockwork **56** rotationally drives the hour indicator drive wheel **52** at a rate such that the hour indicator wheel **60** is rotated 360 degrees every 12 hours. The hour indicator wheel **60** is configured such that it masks the clockwork **56** and the drive wheels from view. The minute indicator wheel **58** is configured so that the surface with the minute indicator is coplanar with the surface of the hour indicator wheel **60** with the hour indicator. The resulting effect is to give the unique appearance of floating rings, yet the time is interpreted using traditional clock interpretation means.

[0036] An additional embodiment is shown in figure 9 and figure 10. This embodiment is essentially the same as that shown in figure 7 and figure 8 with the addition of a demarcation frame **66**. The demarcation frame **66** has the numerals 3, 6, 9, and 12 placed at their corresponding clock positions to aid the viewer in the determination of the indicated time. Alternately, all of the clock numerals 1 through 12, roman numerals, or other graphic indication could be used on the demarcation frame **66** to aid the viewer in the determination of the indicated time. The demarcation frame **66** is not a driven member and does not move. The clockwork **56** is attached to the demarcation frame **66**. The demarcation frame **66** can be mounted on a wall or a frame.

[0037] An additional embodiment is shown in figure 11 and figure 12. This embodiment is essentially the same as that shown in figure 7 and figure 8 except that the hour indicator wheel **60** has been replaced with an hour indicator plate **68**. The hour indicator plate **68** has an indicator that is smaller than the indicator on the minute indicator wheel **58** to denote the hour. The indicator can be either printed on, attached to, or machined into the hour indicator plate **68**. The clockwork **56** rotationally drives the hour indicator drive wheel **52** at a rate such that the hour indicator plate **68** is rotated 360 degrees every 12 hours. The hour indicator plate **68** is configured such that it masks the clockwork **56** and the drive wheels from view. The resulting effect is to give the unique appearance of a floating time indication surface, yet the time is interpreted using traditional clock interpretation means.

[0038] An additional embodiment is shown in figure 13 and figure 14. This embodiment is comprised of the same demarcation ring **20**, minute indicator ring **24**, hour indicator ring **22**, minute indicator drive wheel **26**, and hour indicator drive wheel **28** as the preferred embodiment. However, in this embodiment the minute indicator ring **24** and hour indicator ring **22** are driven respectively by the minute indicator drive wheel **26** and hour indicator drive wheel **28** on the outside surface of the indicator rings **24** and **22**. The outside drive clockwork **70** rotationally drives the minute indicator drive wheel **26** at a rate such that the minute indicator ring **24** is rotated 360 degrees every 60 minutes. The outside drive clockwork **70** rotationally drives the hour indicator drive wheel **28** at a rate such that the hour indicator ring **22** is rotated 360 degrees every 12 hours. The minute indicator ring **24** and hour indicator ring **22** are held against the drive wheels and idler wheels **74** by the force of gravity. The idler wheels **74** rotate freely about an axis through their centers. The demarcation ring **20** rests on the outside drive clockwork **70** body and an idler wheel **74** and is not driven.

[0039] The demarcation ring **20** has the numerals 3, 6, 9, and 12 placed at their corresponding clock positions to aid the viewer in the determination of the indicated time. Alternately, all of the clock numerals 1 through 12, roman numerals, or other graphic indication could be used on the demarcation ring **20** to aid the viewer in the determination of the indicated time. The demarcation ring **20** is not a driven member and does not move. The demarcation ring **20** rests on the body of the clockwork **30**.

[0040] The minute indicator ring **24** and the hour indicator ring **22** are constructed of a clear material which allows for the demarcation ring **20** to be viewed through the minute indicator ring **24** and the hour indicator ring **22**. The minute indicator ring **24** has an indicator to denote the minute of the hour. The indicator can be either printed on, attached to, or machined into the minute indicator ring **24**. Likewise the hour indicator ring **22** also has an indicator, which is smaller than the indicator on the minute indicator ring **24** to denote the hour. The indicator can be either printed on, attached to, or machined into the hour indicator ring **22**. The minute indicator drive wheel **26** and an hour indicator drive wheel **28** have small flanges which keep the minute indicator ring **24** and the hour indicator ring **22** properly aligned with respect to each

other and the demarcation ring **20**. The outside drive clockwork **70** and idler wheels **74** are mounted to a support frame **72** which in turn can be placed in a horizontal surface, such as a desk for use as a desk clock, or attached to a wall for use as a wall clock. The resulting effect is that the clock has a unique design that does not have the traditional clock hands, yet the time is interpreted using traditional clock interpretation means.

[0041] An additional embodiment is shown in figure 15 and figure 16. This embodiment is comprised of the same outside drive clockwork **70**, support frame **72**, idler wheels **74**, minute indicator drive wheel **26**, and hour indicator drive wheel **28** as the previous embodiment. In this embodiment the outside drive clockwork **70** rotationally drives the minute indicator drive wheel **26** at a rate such that an opaque minute indicator ring **76** is rotated 360 degrees every 60 minutes. The outside drive clockwork **70** rotationally drives the hour indicator drive wheel **28** at a rate such that an hour indicator disk **78** is rotated 360 degrees every 12 hours. The opaque minute indicator ring **76** and the hour indicator disk **78** are held against the drive wheels and idler wheels **74** by the force of gravity. The idler wheels **74** rotate freely about an axis through their centers.

[0042] The opaque minute indicator ring **76** has an indicator to denote the minute of the hour. The indicator can be either printed on, attached to, or machined into the opaque minute indicator ring **76**. Likewise the hour indicator disk **78** also has an indicator, which is smaller than the indicator on the opaque minute indicator ring **76** to denote the hour. The indicator can be either printed on, attached to, or machined into the hour indicator disk **78**. The minute indicator drive wheel **26** and an hour indicator drive wheel **28** have small flanges which keep the opaque minute indicator ring **76** and the hour indicator disk **78** properly aligned with respect to each other.

[0043] The hour indicator disk **78** is a flat circular disk of a width at its outer edge which allows it to ride within the flanges of the hour indicator drive wheel **28**. The hour indicator disk **78** is wider in its center so that the surface of the hour indicator disk **78** with the indicator is coplanar with the surface which contains the indicator on the opaque minute indicator ring **76**. The hour indicator disk **78** is symmetrical about an axis perpendicular to its rotational axis in

order to ensure that the disk remains upright and well balanced when driven by the hour indicator drive wheel 28 and resting on idler wheel 74. The resulting effect is that the clock has a unique design that does not have the traditional clock hands, yet the time is interpreted using traditional clock interpretation means.

[0044] Thus the reader will see that the clocks of the invention provide unique designs which are easily read using traditional clock interpretation means. While my above description contains many specificities, these should not be construed as limitations on the scope of the invention, but rather as an exemplification of preferred embodiments thereof. Many other variations are possible. For example, illumination of the rings of the preferred embodiment through the edges of said rings would add aesthetic appeal to the design and allow for time interpretation in low light situations.

[0045] Accordingly, the scope of the invention should be determined not by the embodiments illustrated, but by the appended claims and their legal equivalents.